

Claims

1. Swivel joint system designed to be mounted in line for a cryogenic liquid transfer, such as liquefied natural gas, and the return of the cold gas associated with the cryogenic liquid transfer, of the type comprising a swivel joint device for the passage of the cryogenic liquid and a swivel joint device for the return of the cold gas, each device comprising a conduit provided with a fixed conduit portion and a conduit portion rotating relative to the fixed conduit portion and a rotational guiding means interposed between the two conduit portions, characterized by the fact that the swivel joint device for passage of the gas return is integrated in the swivel joint device for passage of the cryogenic liquid.

2. System according to Claim 1, characterized by the fact that it comprises one and the same rotational guiding device, such as rolling bearing (44), for the two devices.

3. System according to Claim 1 or 2, characterized by the fact that it has central conduit (12) for passage of the cryogenic liquid and annular cold gas return conduit (25) coaxially surrounding central conduit (12) and exterior jacket (39) coaxial to the central conduit, between two end flanges (13a, 13b), by the fact that central conduit (12) and annular conduit (29) and exterior jacket (39) are in the form of two axially aligned sections, which rotate with respect to one another, and by the fact that rotational bearing (44) is placed between the two surfaces facing one another of the two parts of the jacket, while seal (23, 37) is arranged between the surfaces facing one another of the two sections of the central and annular conduits, the rolling bearing and the seals being arranged in planes (P1, P2) which are at least parallel.

4. System according to Claim 3, characterized by the fact that annular space (50) delimited between annular conduit (29) and exterior jacket (39) is filled with a thermally insulating material, which is advantageously configured in the form of two blocks (52a, 52b), each of which is arranged in one of the aforementioned two fixed and rotating

parts of the joint, the two blocks (52a, 52b) making possible a rotational movement with respect to one another.

5. System according to one of Claims 1 to 4, characterized by the fact that the radially internal wall of annular cold gas return conduit (29) is formed by the wall of central conduit (12) for passage of the cryogenic liquid.

6. System according to Claim 5, characterized by the fact that it has two seals (23, 37), one (23) arranged in central conduit (12), and the other (27) arranged in exterior wall (29) delimiting the annular conduit.

7. System according to Claim 6, characterized by the fact that seal (23, 37) has two rings made of sealing material, such as Teflon, which are placed concentrically in one of the opposing surfaces of the corresponding portions of the conduit and are pressed against the other surface under the effect of a spring.

8. System according to one of Claims 3 to 7, characterized by the fact that coaxial central conduit (12) and annular conduit (29) have a shared wall.